Thunder HEsl-T Manual

Revision 1.01

S2688

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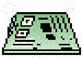
Before you begin…

Check the box contents!

The retail motherboard package should contain the following:

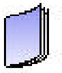

1x Thunder HEsl-T motherboard

1x 34-Pin floppy drive cable

1x Ultra-DMA-100/66/33 IDE cable

1x Ultra160 SCSI cable (for optional SCSI if included onboard)

1x Cable set: 9-pin Serial


1x Thunder HEsl-T user’s manual

1x TYAN driver CD

1x Adaptec 7899W NT Ultra160 SCSI driver diskette (if optional SCSI included)

1x I/O shield with 2 LAN ports

If any of these items are missing, please contact your vendor/dealer for replacement before continuing with the installation process.

Chapter 1: Introduction

1.1 Congratulations!

You are now the owner of the TYAN Thunder HEsl-T motherboard, the most reliable, high performance motherboard for dual Pentium III processing. Designed to be portable as well as flexible, the Thunder HEsl-T can fit into standard ATX chassis and 2U rackmount chassis. This platform utilizes ServerWorks' high-performance ServerSet III HE-SL chipset, enabling next generation application and platform support. Intel Pentium III processors between 500MHz and 1.266GHz* are supported in single and dual configuration. *Please see TYAN's website for updates and information concerning CPU information and support:

http://www.tyan.com

This integrated performance board is supported in an ATX form factor. Features of the Thunder HEsl-T include onboard UltraDMA-33 (Ultra160SCSI with onboard Adaptec controller) and multiple boot options.

With both I/O and drive controller support onboard, dual 64-bit PCI slots provide upgrade solutions for future add-in cards. Integrated 2D/3D graphics provided by the onboard ATI RAGE XL controller enables ease of use into 2U and larger, chassis. Dual onboard LAN ports provide connectivity without add-in overhead.

The Thunder HEsl-T supports up to 6GB of Registered ECC PC133 SDRAM.

Remember to visit TYAN's Website at http://www.tyan.com. There you can find information on all of TYAN's products with FAQs, distributors list and BIOS setting explainations.

1.2 Hardware Specifications

Processor
- Dual PGA370 ZIF sockets
- Supports up to two Intel Pentium III processors
- Supports Intel's Pentium III Processor DP
- One onboard VRM (VRM 8.5) supports 2 CPUs
- Front-side bus support for 100/133MHz

Chipset
- ServerWorks ServerSet III HE-SL
- Integrated I/O APIC
- CSB5 south bridge
- CIOB north bridge
- National 87417 Super I/O ASIC

Memory
- Four 3.3v 168-pin DIMM sockets
- Supports up to 6GB of Registered PC133/100 SDRAM
- Supports ECC (72-bit) memory

Integrated LAN
- Dual Intel 82559 LAN controllers
- 10/100Mbps max data rate per controller

Integrated 2D/3D Graphics
- ATI RAGE XL graphics controller
- 4MB frame buffer (SDRAM)
- Standard 15-pin analog VGA port

Integrated SCSI (manufacturing option)
- Adaptec AIC-7899W controller
- Dual-channel Ultra160 SCSI support
- 160MB/sec max data throughput per channel
- Supports up to 4 LVD SCSI devices per channel

Hardware Monitoring
- Winbond W83782D hardware monitoring ASIC
- CPU Temp, voltage and fan monitoring

Expansion Slots
- 4 64-bit/66MHz (three 5v, one 3.3v) PCI slots
- 2 32-bit/33MHz PCI slots

Integrated PCI IDE
- Dual-channel master mode
- Up to four E-IDE drives
- Support for DMA/ATAPI devices

Integrated I/O
- One floppy connector supports up to two drives (second one via optional slim FD connector)
- Two 9-pin 16550-based serial ports (one via optional cable)
- One 25-pin SPP/ECP/EPP parallel port (via optional cable)
- Four USB ports (two via optional cable)
- PS/2 keyboard and mouse ports

BIOS
- AMI 4Mb BIOS Flash ROM
- Auto-configure IDE drive types
- Multiple boot options
- DMI 2.0 compliant

Form Factor
- ATX footprint (12” x 9.6”, 304.8mm x 243.84mm
- One 20-pin ATX power connector
- One Serial port and one VGA port
- Stacked USB (two) ports
- Side-by-side LAN (two) ports
- Stacked keyboard and mouse ports

Regulatory
- FCC DoC (declaration of Conformity)
- European Community of CE (declaration of Conformity)

1.3 Software Specifications

OS	Windows NT/2000

Chapter 2: Board Installation

Installation

You are now ready to install your motherboard. The mounting hole pattern of the Thunder HEsl-T matches the ATX system board specifications. Your chassis should support a standard ATX motherboard form factor.

How to install our products right… the first time

The first thing you should do is read this user's manual. It contains important information which will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

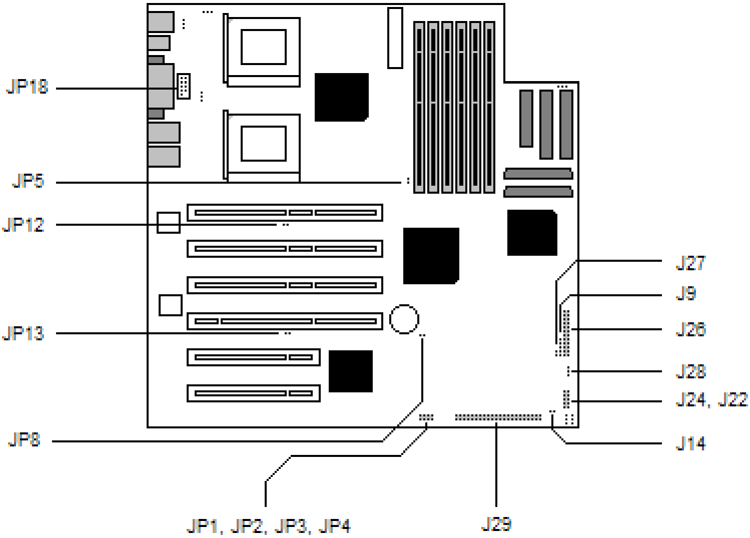
(1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch the power supply. For the safest conditions, TYAN recommends wearing a static safety wrist strap.
(2) Hold the motherboard by its edges and do not touch the bottom of the board.
(3) Avoid touching the motherboard components, IC chips, connectors, and leads.
(4) Avoid touching memory module contacts and IC chips
(5) Place the motherboard on a grounded antistatic surface or on the antistatic bag from which it came in.

Having reviewed the precautions above, the next step is to take the motherboard out of the cardboard box and static bag, hold it by its edges and place it on a grounded antistatic surface, component side up. Inspect the board for damage.

NOTE	DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED

2.1 – Jumper Section

Pin outs for certain connectors are available on the TYAN website: http://www.TYAN.com



2.2 – Front Panel Connector (J26)

17	15	13	11	9	7	5	3	1
18	16	14	12	10	8	6	4	2

1,3: HD LED
2,4: Power LED
5,7: Reset Switch
6,8: Power Switch

2.3 – CMOS Reset (JP8)

1	2

1,2: Connect these two pins together to reset the CMOS settings in case an incorrect setting causes system instability or you have forgotten your system/setup password.

- Power off the system and disconnect the power supply.
- Close pins 1 and 2 on JP8
- Wait about 5 seconds
- Open pins 1 and 2 on JP8
- Reconnect the power supply and power on the system

2.4 – Force 33MHz Click for PCI Bus 1 (JP12)

1	2

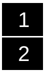
Closed: All devices on PCI Bus1 (slots J31, J32, J33) will run at 33MHz Only.
Open (default): PCI Bus1 can run at 66MHz or 33MHz. Actual speed is determined by the PCI card(s) plugged into J31/J32/J33. If **any** card is only 33MHz capable, all cards in Bus1 will run at 33MHz. If **all** cards support 66MHz, or if no cards are installed, then Bus1 will run at 66MHz.

2.5 – Force 33MHz Click for PCI Bus 2 (JP13)

Closed: All devices on PCI Bus2 (slots J35 and onboard SCSI) will run at 33MHz Only.

Open (default): PCI Bus1 can run at 66MHz or 33MHz. Actual speed is determined by the PCI card plugged into J33. If **any** card is only 33MHz capable, all cards in Bus1 will run at 33MHz. If **all** cards support 66MHz, or if no cards are installed, then Bus1 will run at 66MHz.

2.6 – Host Bus (FSB) Clock Frequency Select (JP5)



Closed: Host Bus clock frequency is fixed at 100 MHz, regardless of processor type. Use this setting to force Host Bus clock to 100 MHz when using 133 MHz FSB CPU(s).

Open (default): Host Bus clock frequency is determined by the type of processor(s) installed. For CPUs that support 133 MHz Front Side Bus (FSB), Host Bus clock will be automatically set at 133 MHz, but can be over-ridden to 100 MHz if JP5 is closed. For CPUs that are only capable of operating at 100MHz FSB, Host Bus frequency will be auto-configured to 100MHz, and 133 MHz is NOT possible.

2.7– CPU Core-to-Bus Frequency Multiplier Select (JP1-4)

These jumpers allow you to adjust the processor core multiplier. However, retail processors will not allow multiplier adjustment.

JP1	JP2	JP3	JP4	Ratio
Open	Open	Open	Open	4.0x
Short	Short	Short	Short	4.0x
Short	Open	Open	Short	4.5x
Open	Open	Short	Short	5.0x
Open	Open	Open	Short	5.5x
Short	Short	Short	Open	6.0x
Short	Short	Open	Open	6.5x
Open	Short	Short	Open	7.0x
Open	Short	Open	Open	7.5x
Short	Open	Short	Open	8.0x
Open	Short	Short	Short	8.5x
Open	Short	Open	Short	9.0x
Short	Short	Open	Short	9.5x
Short	Open	Open	Open	10.0x
Short	Open	Short	Short	10.5x
Open	Open	Short	Open	11.0x
Short	Open	Open	Short	11.5x
Open	Open	Short	Short	12.0x

4.0x is the default setting.

Note: Whatever the multiplier is set to, the setting will apply to both CPUs. These settings only affect non-retail (engineering sample, Q-spec) CPUs. For a production (S-spec) CPU, the multiplier is fixed inside the CPU, and these jumpers will not have any affect regardless of their setting.

2.8 – Add-in Drive Controller Activity LED (J27)

1
2

Connect your chassis front panel IDE LED to this jumper for activity monitoring of all drives connected to the onboard IDE controllers.

2.9 – External PC Speaker (J28)

1
2
3
4

Connect your chassis speaker to these pins for speaker functionality.

2.10 – TYAN Server Management Daughter Card (SMDC) connector (J29)

You may use this connector for the server management card (purchased separately).

2.11 – USB Port 2, 3 Connectors (J24, J22)

1	1
2	2
3	3
4	4
5	5
JP24	JP22

You may use these connectors for front panel USB connectors if your chassis allows.

2.12 – COM Port 2 (J18)

1	1
2	2
3	3
4	4
5	

You may use the included COM2 cable in this connector if you wish to use the second serial port.

2.13 LAN Activity LED (J9)

1
2
3
4

You may use the following pins for LAN activity LED.
Pins 1 and 2 are for LAN1 activity
Pins 3 and 4 are for LAN2 activity

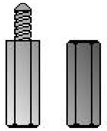
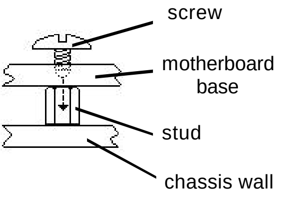
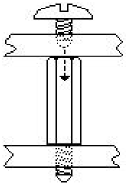
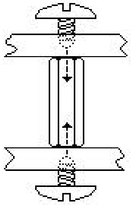
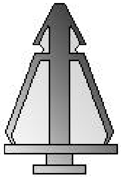
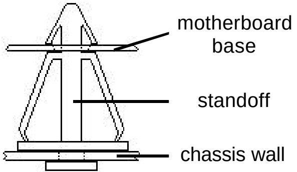
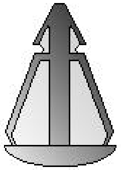
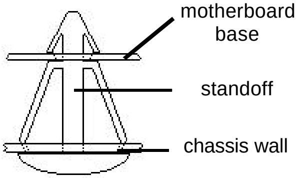
2.14 Mounting the motherboard

Your chassis may include mounting hardware. If mounting hardware was included, you can use the following examples to help you in stalling your motherboard into the chassis.

If your chassis has the studs integrated into the chasses wall, then you would only need to use screws (possibly included with your chassis) to install the motherboard. See examples (Figure 2.0, shown below for more details.

If the chassis includes mounting hardware without the studs pre-installed, then you will need to install the motherboard using the mounting hardware as shown in the examples below. Remember not to over tighten any of the screws, or you may risk breaking internal traces in the surrounding area, or damage the motherboard in some other way.

Other examples of how to install your motherboard using other hardware (that may or may not have been included with your chassis) are shown below.

Type of hardware	One solution for installing motherboard	Another solution	Another solution
			
			
			

NOTE	The diagrams above are only representative of a few solutions for installing a motherboard into the chassis. The installation procedure for installing your motherboard into the chassis may differ.

2.15 Installing Memory

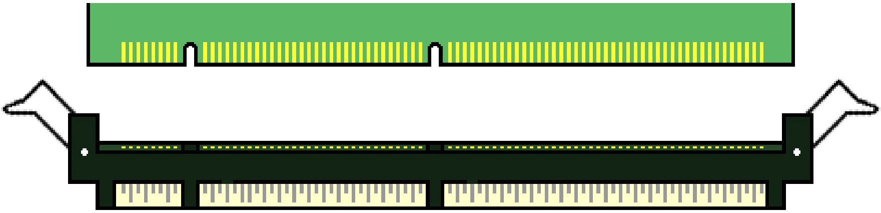
Please keep in mind that although some memory modules may appear to be high-quality, they may contain inferior or substandard parts. The type of memory you choose to install should be checked against the memory compatibility list, which is available from TYAN's website at http://www.TYAN.com.

Here are some details of memory installation for this board:

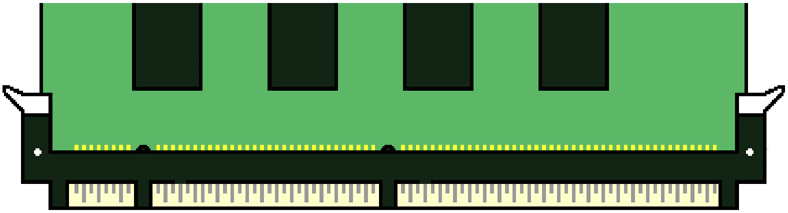
- At least TWO REGISTERED SDRAM DIMMs must be installed for the system to POST.
- Supports 128MB, 256MB, 512MB, and 1024MB** PC133/100 Registered SDRAM.
- All installed memory will be automatically detected.
- The motherboard supports up to 6.0GB of PC133/100 Registered SDRAM memory.

Memory Installation Procedure

Step1: Line your module up so that the pins fit into the socket. There is only one way your DIMM can fit properly. Make sure that the short row of pins is lined up with the short gap in the DIMM socket, just as the long row of pins should line up with the long gap in the DIMM socket.



Step2: Insert the DIMM by pushing the module into the socket with even force Do not insert one end and then the other: install the whole module at once or you might bend the DIMM pins. Make sure the DIMM is securely seated.

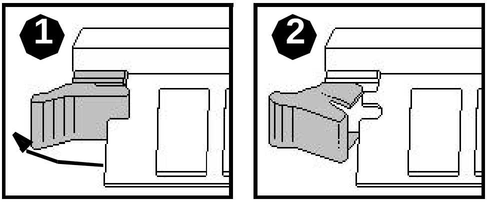


NOTE	**Memory modules MUST be installed in pairs. Bank 0 to Bank 0, Bank 1 with Bank 1, etc.**

Look the DIMM into place by pushing the clips back on either end of the socket onto the notches in the ends of the DIMM (see pictures above details).

Removing a DIMM

Removing a DIMM is just the reverse: pull back the clips from the DIMM (see pictures on previous page), and carefully pull the module straight out. Place the DIMMs in an anti-static bag as soon as you remove them to avoid static damage.



Suggested Memory Configurations

The table below shows some of the possible memory configurations. Not all possible configurations are listed. Your memory configurations may differ from one or more of the combinations** shown below.

2.16 Installing the CPU and Cooling Fan

Intel Pentium III processors up to 1.2GHz can be used on this board. For more information on CPU compatibility, check TYAN's website at http://www.TYAN.com/

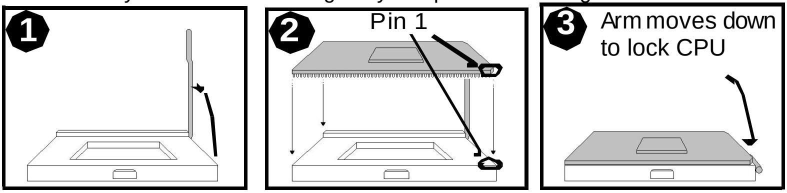
When installing your CPU, remember the following:

- Memory must be installed in pairs -
- The CPU is a sensitive electronic component and can easily be damaged by static electricity
- Do not touch the CPU pins with your fingers
- You should be able to insert the CPU into the socket with virtually no force
- Do not press down hard on the CPU as you might bend or break pins, or otherwise damage the CPU.
- The CPU voltage will automatically be detected by the motherboard, so there is not need to set any jumpers or BIOS setting.

Installing the CPU

Before installing the CPU, check it for any visible damage. Make sure none of the pins are bent or missing. Be sure where Pin 1 is on both the CPU and the socket. The following steps each have corresponding picture next to it to help guide you through the installation.

Careful lift the arm of the ZIF socket until it is at 90 degree angle pointing away from the motherboard. Be very careful not to damage any components that might be next the socket.



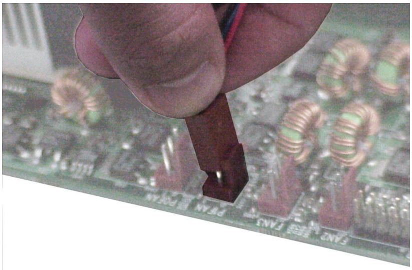
There are two beveled corners on the CPU, which will match the two angled corners on the socket. Careful install the CPU by lining both Pin 1 on the CPU and Pin 1 on the socket, making sure the pins actually fit into the socket. Do not force the CPU into the socket: check the pin alignment of the CPU pins to socket holes.

Push down lightly on the CPU while lowering the arm on the socket to secure the CPU (see right). A squeaking noise may be heard while lowering the arm or the socket may make a ‘click’ noise when the arm is locked into position: these noises are normal.

Installing the Cooling Fans

After a CPU has been installed, you will need to install the proper cooling device for the CPU. This device, a heatsink/fan combination can be purchased at many computer retail stores. Installation of the cooling device may vary depending on the fan manufacturer’s design. You should also take space into consideration when installing a cooling device: make sure the cooling device is not too big, or else you may end up damaging components around the CPU socket.

TYAN highly recommends that you use a thin layer of some type of thermal compound (available from many computer retail stores), between the CPU and the heatsink, to maximize distribution of heat away from the CPU. Please use extra caution when installing any type of clamp-style fan, or else damage may occur to the CPU socket and or the CPU itself.



FAN

1	2	3
Ground	+12V	Speed

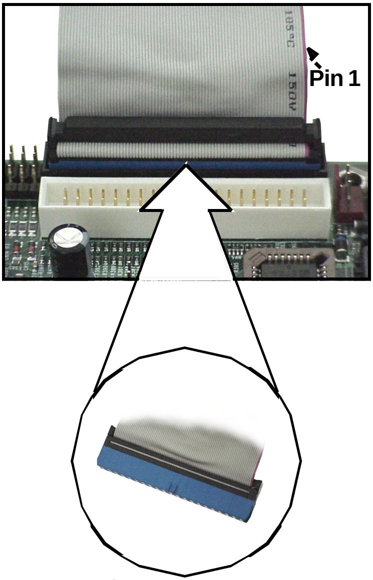
Specifications

Voltage	Amperage
12V	0.3A

NOTE	The FAN connector has a 12V, 0.3A limitation. TYAN takes no responsibility and will not be held liable for damage related to the misuse of any FAN jumper.

Alternatively, if you wish to also install chassis fans for increased cooling, headers are provided to power those fans as well. Chassis fan installation will vary depending on your chassis manufacturer’s design. Please check with your chassis manufacturer for details on proper chassis fan installation.

2.17 Connecting IDE and Floppy Drives



BLUE end goes to IDE connector

A variety of IDE and ATAPI-compliant devices can be installed on this motherboard, such as hard disk drives (HDDs) and CD-ROMs.

Please keep in mind that on this motherboard, the primary IDE connector is BLACK, and the secondary IDE connector is WHITE. See the picture to the rightfor an example of the IDE cable properly connected to the motherboard, with the BLUE end of the IDE cable installed on the motherboard.

Pin 1 on the IDE cable is usually denoted by a red or colored stripe down one side of the cable. That side of the cable must match Pin 1 on the motherboard's IDE connector. There will also be a key pin on the cable that matches with a notch in the IDE connector, to ensure proper installation. Consult the documentation that came with your IDE/ATAPI device, or contact the device's manufacturer for more details on installation.

Please note that UltraDMA-100/66 IDE HDDs require a special 80-wire cable (see picture at right), which has additional grounding wires. This cable has been included with this motherboard for your convenience. The UltraDMA-100/66 cable is backwards compatible with UltraDMA-33 and legacy IDE HDDs.

NOTE	Only TYAN-approved cables are recommended for this motherboard. If you are using an existing configuration with older cables, your system might not function properly. Use only TYAN-approved cables (i.e. the ones included with your new motherboard).

Some symptoms of incorrectly installed HDDs are...

HDDs are not auto-detected	May be a Master/Slave configuration problem, bad IDE cable, or BIOS mis-configuration. Consult the HDD documentation or contact your HDD vendor.
Hard Disk Drive Fail message at bootup	May be a bad cable or lack of power going to the drive. Check the cables for damage and bad connections.
No video or beeps during bootup	Usually means the cable was installed backwards.
HDD lights are constantly on	Bad IDE cable or defective drives/motherboard. Try another HDD, or contact your HDD vendor.
HDD does not power on	Check power cables and cabling. May be a bad power supply or IDE drive problem.

Connecting Floppy Drives

See the picture below for an example of a floppy cable. Most of the current floppy drives on the market require that the cable be installed with the colored stripe positioned next to the power connector. In most cases, there will be a key pin on the cable which will force a proper connection of the cable.

The first floppy drive (sometimes denoted as A:) is usually attached to the end of the cable with the twist in it. Drive B: is usually connected to the second or third connector in the cable (the second or third connector after you install Drive A:). Refer to your floppy drive's installation instructions (if available), or contact your dealer if you are unsure about how to attach the floppy drive(s). Remember, you can only have 2 floppy drives connected at any given time.

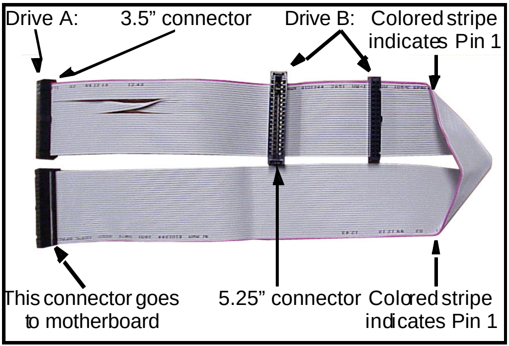
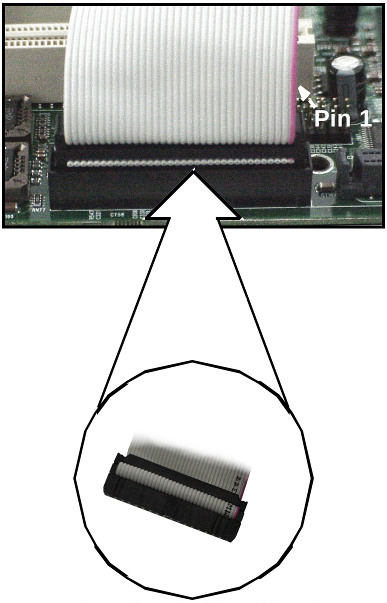

Drive A:
3.5" connector
Drive B:
Colored stripe indicates Pin 1
This connector goes to motherboard
5.25" connector
Colored stripe indicates Pin 1

Figure 2.4*



Match striped side with Pin 1

Some symptoms of incorrectly installed FDDs are...	
FDDs are not auto-detected	Usually caused by faulty cables, cables put in backwards, or a bad floppy or motherboard. Try another floppy drive to verify the problem or try another cable. Also check to see if the onboard floppy is enabled in the BIOS.
Floppy Drive Fail message at bootup	The cable, floppy, or motherboard may be faulty. Try another cable or floppy drive to verify.
FDD does not power on	Check power cables and cabling. May be a bad power supply or IDE drive problem.
FDD light is constantly on	Usually signifies that the cable is on backwards. Reverse the cable at the floppy drive end and try again.

2.18 Installing Add-in Cards

There are a few rules you need to follow when installing add-on cards. In order to assure proper operation and a quick installation, adhere to the following guidelines:

- If you are going to install a PCI-bus interface card on your system, be aware that any one of the five PCI slots can support a Master or Slave device.

- NEVER force a card into a slot. If it won’t fit properly, look at the socket on the motherboard to make sure there are no wires or other obstructions to the slot. Damage may occur otherwise.

- NEVER plug an ISA card into a PCI slot. You will void your warranty, and you will damage your system board if you try to do this.

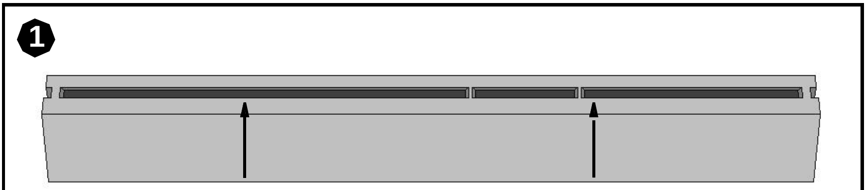
- When plugging the card in, especially when installing long cards, try to push the entire card in at one time. Don’t force one end of the card into the socket first and then the other, or a rocking motion between the card and the slot might occur, and could damage the pins within the socket.

- Make sure the cards are seated securely into their slots.

- Before turning on the system, make sure no cards are touching.

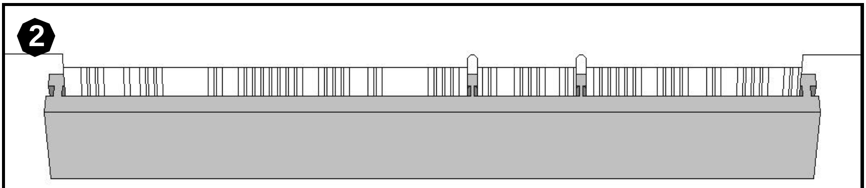
- Check the PCI device specifications with the PCI slot specifications BEFORE installing!

When installing the add-on cards, make sure the cards are installed with even force; do not insert one end and then the other. See the before (Figure 2.1a) and after (Figure 2.1b) example installation images below for details.



Check orientation of card when installing

Figure 2.1a*



Push card down with **even** force

Figure 2.1b*

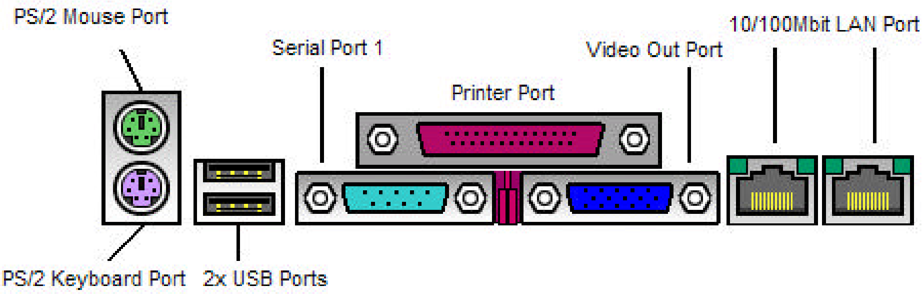
NOTE	*Your PCI slots may not look like those in the above diagrams; they are used simply as examples.

2.19 Connecting PS/2, USB, and Serial Devices

This motherboard includes ports for PS/2 mouse and keyboard, Universal Serial Bus (USB) devices, and serial and parallel devices. Please note that the upper PS/2 port is the mouse port, and the lower PS/2 port is for the keyboard (see Figure 2.3 below).

Installation of peripheral/external devices may vary. For details on installation of devices into the various ports shown below, please consult your device's documentation, device manufacturer, or your dealer for details.

Connecting Serial and Parallel Ports
The serial and parallel ports can be used to connect various devices such as a mouse or printer. The connectors can only be connected one way: be sure and check the orientation of the connector before installing it into the port.



2.20Connecting the power supply*

This motherboard requires the following:

- ATX power supply, one that conforms to ATX standard 2.01 or better

The clip on the power connector should lock over the tab on the onboard connector. You shouldn't be able to plug the power connector in any other way but just to be safe, make sure it looks like Figure 2.4b. Make certain that you do not miss connecting any of the pins because if you do, you will void your warranty and possibly cause damage to yourself and/or your motherboard when the power is turned on. After connecting the power, make sure the connector is seated firmly into its socket so it will not become loose or fall off when the computer is jostled or moved.

Step 1: Shown on the right, in Figure 2.4a, is the 20-pin connector of the ATX power supply.

Note the clip in the image: it will help you install the plug correctly.

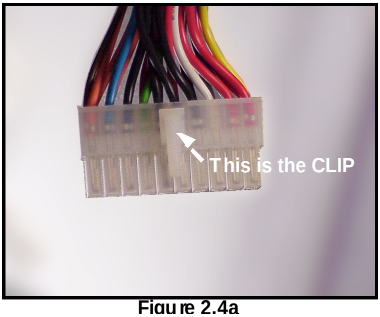


Figure 2.4a

Step 2: Shown on the right, in Figure 2.4b, is the 20-pin connector plugged into the board*.

The clip is over the TAB of the onboard connector.

When you connect the cable into the motherboard's 20-pin onboard connector, it will make a CLICK noise as it is installed.

This is normal.

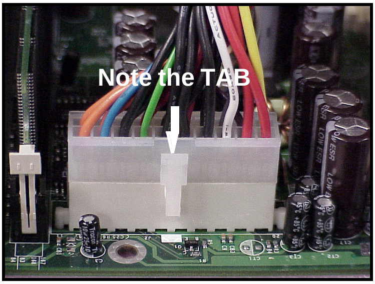


Figure 2.4b**

2.21 You are done!

Other than checking the jumper settings and cable connections, and putting the case back together, you are done.

Installing a new motherboard may seem difficult, but by following these directions, you should have a fairly uneventful time installing our products. If you do encounter problems, your vendor/dealer will be able to help you, or you can consult one of our many technical support solutions (i.e. website or phone).

NOTE	Your ATX power connector may not look like those in the above diagram; they are used simply as examples.

Chapter 3: BIOS Setup

Introduction to the BIOS setup

The BIOS is the basic input/output system, required by the computer to perform functions such as CPU and hard drive support. This chapter describes different settings for the BIOS that can be used to configure your system.

The BIOS section of the manual is subject to change without notice and is provided here for reference purposes only. The settings and configurations of the BIOS are current at the time of print, and therefore they may not be exactly the same as that displayed on your screen.

This manual describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated battery-backed memory, called NVRAM, that retains the information when the power is turned off.

The BIOS in your motherboard is a customized version of industry-standard BIOS for IBM PC AT-compatible personal computers. It supports Intel x86 and compatible processors. The BIOS provides critical low-level support for the system central processing, memory, and I/O subsystems.

The BIOS has been customized by adding important, but non-standard, features such as virus and password protection, power management, and detailed fine-tuning of the chipset controlling the system. The rest of this manual is intended to guide you through the process of configuring your system using this BIOS setup program.

Starting Setup

The BIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking out the system and configuring it through the Power-On Self Test (POST).

When these preliminaries are finished, the BIOS will seek an operating system on one of the data storage devices (HDD, floppy drive, etc.) If one is found, the BIOS will launch that operating system and hand control of system operations to it. You can start the setup program by pressing the [DEL] key while the system is booting up.

Setup Keys

The table below shows how to navigate in the setup program using the keyboard.

Key	Function
Tab	Moves from one selection to the next
Left/Right Arrow Keys	Change from one menu to the next
Up/Down Arrow Keys	Move between selections
Enter	Opens highlighted selection
PgUp/PgDn Keys	Change highlighted selection

Getting Help

Press **F1** to display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press **ESC** or the **F1** key again.

In Case of Problems

If you discover that you have trouble starting the computer after making and saving changes with the BIOS setup program, you can restart the computer by either:

- ***Holding the Power button down until the machine turns off***.

The best advice is to alter only settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you're absolutely sure you need to. The Chipset defaults were carefully chosen by TYAN and or your system manufacturer for the best performance and reliability. Even a seemingly small change to anyone of the Chipset options without consideration, can cause your system to become unstable immediately or progressively.

Setup Variations

Not all systems have the same setup program. While the basic look and function of the setup program remains more or less the same for all systems, the appearance of your Setup options may or may not follow the same order listed in this manual. In addition, the final layout of all Setup options depends on your system designer. They can decide that certain items that are listed in the following pages remain hidden from user alteration.

3.1 Main Setup

In this section, you can alter general features such as the data and time, as well as access to the IDE configuration options. Note that the options listed below are for options that can directly be changed within the **Main Setup** screen.

System Time	HH: Hours (24 hour format) MM: Minutes SS: Seconds	Adjusts the system clock.
System Date	MM: Month DD: Day YYYY: Year	Adjusts the system date.

3.2 Advanced

Options related to System settings can be altered through the following.

Super IO Configuration	All settings discussed in following sections.
IDE Configuration	
Floppy Configuration	
Boot Settings Configuration	
Onboard Device Configuration	
Event Log Configuration	
System Health Monitor	
Remote Access Configuration	

3.2-A Super IO Configuration

Options related to the IO interface can be altered through the following.

Serial Port 1, 2	**Enabled (d)** Disabled Auto	Toggles use of serial ports A and or B. **Enabling** ports also requires you to enter the I/O address for that port unless you select **Auto**.
Serial 2 Mode	**Enabled (d)** Disabled	Toggles the onboard Serial B port.
Serial Base I/O	**3F8, 2F8 (d)** 3E8, 2E8	These options are dependent on the IRQ and vice versa.
Serial Interrupt	**IRQ3 (d)** IRQ4	These IRQs are paired with the Base I/O option. Recommended config: 2F8 & IRQ3 3F8 & IRQ4
Parallel Port	Enabled Disabled **Auto (d)**	**Enabled** requires manual input of port parameters. We recommend you leave this option on **Auto**.
Parallel Port Mode	**Output Only (d)**	Standard one-way protocol for parallel devices.
	Bi-directional	Two-way protocol
	EPP	Enhanced Parallel Port may provide higher bandwidth if an **EPP** compliant device is used (e.g. parallel Zip drive).
	ECP	Enhanced Compatibility Port may provide higher bandwidth if an **ECP** compliant device is used (e.g. parallel Zip drive).
Parallel Address	**378 (d)** 278 3BC	These options appear when the parallel port is set to **Enabled**.
Parallel IRQ	**IRQ5 (d)** IRQ7	These options appear when the parallel port is set to **Enabled**.
ECP DMA Channel	**DMA1 (d)** DMA2	These options appear when parallel port is set to **Enabled**.

3.2-B IDE Configuration

Options related to the IDE controller can be altered through the following.

Onboard PCI IDE Controller	**Both (d)** Primary Secondary	Leave as **Default**.
Primary Master/Slave Secondary Master/Slave	**Auto (d)** Disabled	Leave as **Default**.

Hard Disk Write Protect	Enabled **Disabled (d)**	Toggles the use of boot sector protection. This ensures that no viruses can damage the hard drive.
ATAPI Detect Time Out	0, 5, 10, 15, 2.0x, 2.5x, 3.0x, **3.5x (d)**	Defines how long the system will try to detect ATAPI devices for.
ATAPI 80pin Cable Detect	Host & Device (d) Host Device	Toggles the detection of 80wire IDE cables.

3.2-C Floppy Configuration

Options related to floppy drives can be altered through the following.

Floppy A Floppy B	360KB, 5 ¼” 1.2MB, 5 ¼” 720KB, 3 ½” **1.44MB, 3 ½” (d)** 2.88MB, 3 ½” Disabled	Defines the floppy drive type.
Diskette Write Protect	Enabled **Disabled (d)**	Toggles write protection. This will be effective only if device is access through BIOS.
Floppy Drive Seek	Enabled **Disabled (d)**	Toggles floppy drive seeking during POST.

3.2-D Boot Settings Configuration

Options related to startup settings can be altered through the following.

Quick Boot	Enabled **Disabled (d)**	When set to **Enabled**, some self tests will be skipped during POST.
Quiet Boot	**Enabled (d)** Disabled	If set to **Enabled**, OEM logo will be displayed instead of POST messages.
Add-On Rom Display Mode	**Force BIOS (d)** Keep Current	Leave as **Default**.
Boot up Num-Lock	**On (d)** Off	Specifies whether Num-Lock will be on or off during bootup.
Boot up CPU Speed	**High (d)** Low	Specifies the CPU speed during startup.
PS/2 Mouse Support	**Enabled (d)** Disabled	Toggles the use of the PS/2 mouse port.
Typematic Rate	**Fast (d)** Slow	Changes speed of key repeat rate.
System Keyboard	**Present (d)** Unavailable	Will allow continual boot if the keyboard is not attached.

Primary Display	Absent **VGA/EGA (d)** Color 40x25 Color 80x25 Monochrome)	Changes default video mode. Leave as is.
Parity Check	Enabled **Disabled (d)**	Toggles checking of system memory for corruption.
Boot to OS/2	Yes **No (d)**	Toggles boot to OS/2 OS. Leave as default.
Wait for F1 if "error"	**Enabled (d)** Disabled	If Enabled, you will have to press F1 for the system to continue booting if an error is detected during POST.
Hit "Del" Message	**Enabled (d)** Disabled	Toggles display of pressing DEL key to enter BIOS.
Internal Cache	**Write Back (d)** Page Flip	Leave as default.
Processor Serial Number	Enabled **Disabled (d)**	Toggles the use of Pentium III serial number.
System BIOS Cacheable	**Enabled (d)** Disabled	Toggles the use of caching BIOS instructions into RAM for faster processing.

3.2-E Onboard Device Configuration

Options related to onboard devices can be altered through the following.

Onboard ATI Video	**Enabled (d)** Disabled	Toggles the onboard ATI video graphics.
Onboard SCSI	**Enabled (d)** Disabled	Toggles the onboard SCSI controller.
Onboard 82559 (1)	**Enabled (d)** Disabled	Toggles LAN port 1.
Onboard 82559 (2)	**Enabled (d)** Disabled	Toggles LAN port 2.

3.2-F Event Log Configuration

Options related to Event Logging can be altered through the following.

Event Logging	Enabled **Disabled (d)**	Toggles event logging. Records errors.
ECC Event Logging	Enabled **Disabled (d)**	Toggles ECC event logging. Records errors.
Clear All Event Logs	Yes No	Clears all event logs.
View Event Log		Views events.
Mark All Events As Read	OK Cancel	If **OK**, BIOS will clear event log.

3.2-G Chipset

Options related to the graphics interface can be altered through the following.

C000 to DC00 16K Shadow	**Cached (d)** Disabled	Toggles shadowing of video ROM data into RAM for faster execution. Option only for 16bit DOS.
Write Combining for P6-to-PCI	**Enabled (d)** Disabled	Leave as **Default**.
Act to Deact	5 Clks **6 Clks (d)**	Leave as **Default**.
Act to Read/Write	2 Clks **3 Clks (d)**	Leave as **Default**.
RAS Precharge Time	2 Clks **3 Clks (d)**	Leave as **Default.**
RA Cycle Delay	**10 (d)**, 9, 8, 7 Clks	Leave as **Default**.
SDRAM CAS Latency	CAS 2.5 **CAS 3 (d)**	Defines how many memory refreshes occur before memory can be written to or read from.
Memory Auto Precharge	**Enabled (d)** Disabled	Leave as **Default**.
SDRAM Fast Timing	**11-1-1-1 (d)** 10-1-1-1	Leave as **Default**.
Memory Write Posting	**Enabled (d)** Disabled	Leave as **Default**.
Fast ECC Enable	Enabled **Disabled (d)**	Leave as **Default**.
ISA IO Cycle Delay	FULL Delay **1.5 BCLK (d)**	Leave as **Default**.
Scrubbing Enable	Enabled **Disabled (d)**	Scrubbing is an error correction feature. If enabled, POST will take a few minutes. Leave as **Default**.

3.2-H PCIPnP

Options related to the Plug and Play PCI settings interface can be altered through the following.

Plug & Play OS	Yes **No (d)**	Toggles the option of letting the OS take care of IRQ routing or the BIOS. Select **Yes** to let the OS manage IRQ settings.
Reset Config Data	Yes **No (d)**	Resets BIOS area where IRQ and DMA settings are stored.
PCI Latency Timer	32, **64 (d)**, 96, 128, 160, 192, 224, 248	Leave on **64** for best combination of performance and stability.
Allocate IRQ to PCI VGA	Yes No	Assigns an IRQ to PCI video card.

Palette Snooping	Enabled **Disabled (d)**	Palette Snooping can fix color problems associated with non-standard video cards such as MPEG decoders.
USB Function	**Enabled (d)** Disabled	Toggles usability of USB ports.
Legacy USB Support	Auto Enabled **Disabled (d)**	Toggles the ability to use USB devices in 16bit DOS.

3.2-I Power Management Setup

Options related to the Power Management settings interface can be altered through the following options.

ACPI Aware O/S	Yes **No (d)**	Defines whether the OS can manage IRQs, DMAs, and other system settings on its own.
Power Management	Enabled **Disabled (d)**	Toggles power management features on and off.

3.2-J Boot

Options related to boot devices can be altered through the following.

Boot Device Priority	1st Boot Device 2nd Boot Device 3rd Boot Device	Settings for boot priority.
Hard Disk Drive	Dependent on system	Specifies the boot sequence for hard drive booting. This option will show all storage devices.
Allow cards to trap INT 19	Yes **No (d)**	Options dependant on System but most of the time it will be the FDD..

3.2-K Security

Options related system security can be altered through the following.

Change Supervisor Password		Changes system password.
Change User Password		Changes boot password.
Clear User Password		Clears boot password.
Boot Sector Virus Protection	Enabled **Disabled (d)**	Toggles protection of boot sector on the hard drive from being modified.

3.2-l Exit

Options related exiting and saving can be done using the following.

Exit Saving Changes		Exit and save options.
Exist Discarding Changes		Exit but don’t save options.
Lead Setup Defaults		
Discard Changes		Discard any changes made.
Save Changes		Save changes.

4.0 Installing the hard drives

If you wish to use your current bootable HDD (using Windows NT 4.x or 2000) as part of the bootable mirrored (RAID 1) array, do NOT connect the hard drive yet. First, you MUST install Windows NT 4.x or 2000 on your existing hard drive controller.

Hard drives must be of the Fast ATA-2, EIDE, or UltraDMA-33/66/100 type if you want to use them with the RAID controller. For best performance, we recommend that you use drives of identical model and capacity. By matching drives, you ensure compatibility as well. If you are planning to use an UDMA-66 or 100 drive, you must use an UltraDMA-66/100 cable (TYAN has included that cable with the motherboard).

Also, if you are planning to use striping (RAID 0), we recommend you use two new drives. For mirroring (RAID 1), you should either use two new drives, or your old drive and a new drive (of the same size or larger than your current drive).

Step 1: The first step is to set the hard drive to Master, Slave, or Cable Select setting, and install them according to the table below. Note: Sometimes the Master drive with no Slave attached is called “single”. The Master/Slave setting differentiates two drives connected on the same cable. **NOTE: Check your HDD documentation for master, slave, and cable select settings**.

Jumper Settings (see your HDD documentation for jumper settings)		
# of Drives	IDE Channel 1	IDE Channel 2
1	M	-
2	M	M
3	M & S	M
4	M & S	M & S

M=Master, S=Slave

Step 2: Next, you should install the drives into your system, and connect the power. Attach one UltraDMA cable (black connector) to each drive (if you have a Slave drive, connect that drive to the second connector (grey connector) on the UltraDMA cable). Make sure that Pin 1 on the cable (indicated by the colored stripe) is connected to Pin 1 of the hard drive. See Figure I-1 (to the right) for an example.

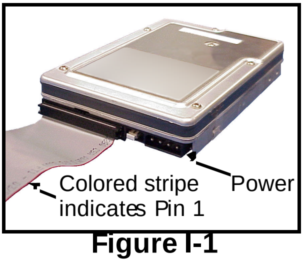


Figure I-1

Step 3: The blue end of the cable (see Figure I-2 to the right for an example) goes to the connector on the motherboard (see p. 10 for location). Make sure Pin 1 of the ATA-66 cable connects to Pin 1 of the IDE connector (see p. 10 for location). Check all connections after completing this step, before you continue to the next part of the installation.

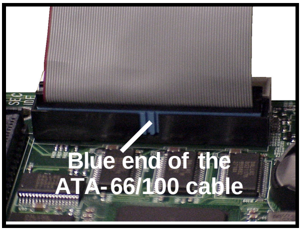


Figure I-2

SCSI Setup Section

Introduction

The Adaptec 7899W enables you to connect up to 30 SCSI devices—such as very large arrays of high-performance HDDs, external storage subsystems, clustered configurations, Ultra160 hard disk drives, scanners, and CD-ROM drives.

The Adaptec 7899W can support up to two independent SCSI channels, each with a maximum through-put of 160 MBytes/sec. SCSI Channel A (marked* either as "CH 1" or "CH A" on the board) has one internal connector. SCSI Channel B (marked* either as "CH 2" or "CH B" on the board) has one internal connector.

You can connect Ultra160 and Ultra2 SCSI devices to the 68-pin Low Voltage Differential/Single-Ended (LVD/SE) connectors on both SCSI channels. Or you can operate the newer Ultra160 and Ultra2 devices at their maximum speed on Channel B while at the same time using legacy SCSI devices on Channel A.

This installation guide explains how to

- Set up SCSI devices
- Connect SCSI devices

Support for Older SCSI Devices

We recommend that if you have single-ended Ultra SCSI and earlier SCSI devices you connect them to Channel A of the Adaptec 7899W SCSI and that you connect newer Ultra2 and Ultra160 SCSI devices to Channel B. This allows the Adaptec 7899W to support newer Ultra160 and Ultra2 SCSI devices at speeds up to 160 MBytes/sec while at the same time supporting Ultra (legacy) devices at speeds up to 40 MBytes/sec. It also allows you to use longer cable lengths for the newer SCSI devices.

NOTE:	If you connect Wide Ultra/Ultra SCSI devices to the same SCSI channel as Ultra160 and Ultra2 SCSI devices, the data transfer rate for the Ultra160 and Ultra2 SCSI devices will drop to Ultra SCSI performance levels. To achieve maximum data transfer rates for the newer SCSI devices, be sure to connect them on their own SCSI channel.

Setting up SCSI devices

There are several things you may need to do to your SCSI devices before you connect them to the Adaptec 7899W SCSI:

- Check the SCSI IDs
- Set the termination
- Connect the power cables

* subject to change without notice

Since setup can vary from device to device, always refer to the device's documentation for specific instructions. Below are some guidelines for setting SCSI IDs and termination on your devices.

Check the SCSI IDs

The Adaptec 7899W and each device you connect to it must have a unique SCSI ID number ranging from 0 to 15 on each channel. No two devices on the same SCSI channel can have the same SCSI ID.

The Adaptec 7899W is preset to ID 7 for each channel and should not be changed. If you boot from a SCSI hard disk, make sure the hard disk SCSI ID is set to 0. (Most SCSI hard disks are preset to SCSI ID 0 at the factory.) The SCSI IDs for internal devices are usually set with jumpers; SCSI IDs for external devices are usually set with a switch on the back of the device.

Terminate the Ends

To ensure reliable communication on the SCSI bus, the device at the end of each cable, or the end of the cable itself, must have a terminator installed (or enabled). Terminators must be removed, or termination must be disabled, on devices between the ends of each cable.

NOTE:	When connecting Ultra160 or Ultra2 SCSI devices, the SCSI bus must be terminated either on the end of the cable (with a permanent terminator) or with a separate terminating connector. Ultra SCSI and earlier single-ended devices can terminate the bus directly from the device. If you use an Ultra SCSI terminator on an LVD Ultra160 and Ultra2 SCSI bus you will force the bus to Single-ended mode, limiting the speed and cable distance. For this reason be sure that you have the necessary Ultra160 or Ultra2 cable or terminator before installing the Ultra160 SCSI devices.

Connecting SCSI Devices

You can connect a total of 30 SCSI devices to the Adaptec 7899W,with up to 15 devices on each SCSI channel. Before connecting devices, be sure to review **Setting up SCSI Devices on p. 47.**

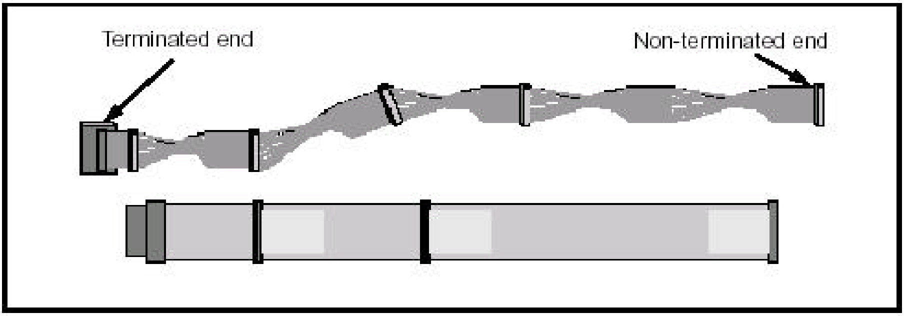
Connecting Internal Ultra160 and Ultra2 Devices

A special 68-pin internal LVD cable is needed to connect internal Ultra160 or Ultra2 SCSI devices. If your cables are not marked, you can identify most LVD cables as having twisted pairs of the flat ribbon cable between the device connectors. Some cables are laminated so that they lay flat. Internal LVD cables usually have a terminator built into the end of the cable.

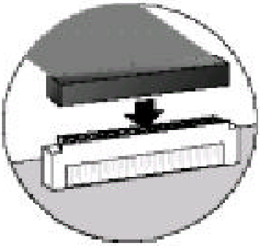
The Adaptec 7899W has two separate Ultra160 SCSI channels, as shown on the board map on **p. 11.** Each channel has an internal LVD/SE connector to which you can connect internal SCSI devices. Follow these steps to connect your internal Ultra160 and Ultra2 devices:

NOTE: We recommend that you keep your Ultra160 and Ultra2 SCSI devices on a separate SCSI channel from your Ultra SCSI devices. This allows the newer Ultra160 and Ultra2 SCSI devices to transfer data at their maximum speed.

Step 1 Locate a 68-pin internal LVD SCSI cable, which may have either twisted wires or flat wires, as shown here.

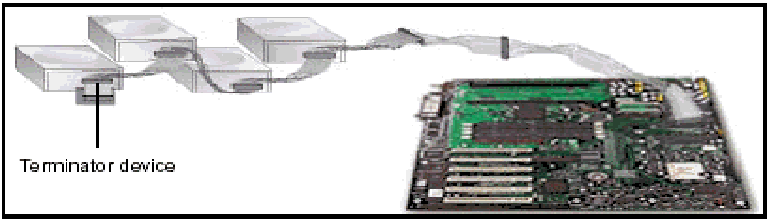


Step 2 Plug the non-terminated end of the cable(s) to the LVD/SE SCSI connector(s) (shown below).



Step 3 Plug the internal Ultra160 and Ultra2 SCSI devices to the other cable connectors, starting with the connector at the terminated end of the cable (note: example installation below may not identically represent installation).

Step 3 Plug the internal Ultra160 and Ultra2 SCSI devices to the other cable connectors, starting with the connector at the terminated end of the cable (note: example installation below may not identically represent installation).



NOTE: Internal Ultra160 SCSI peripherals come from the factory without termination. Proper termination is provided by the built-in terminator at the end of the Ultra160 internal SCSI cable.

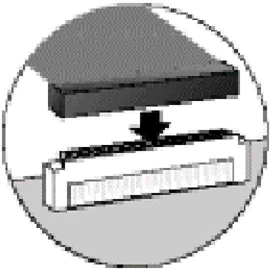
Step 4 Connect a power cable from your computer's internal power supply to each internal SCSI device.

Connecting Wide SCSI Devices

You can connect Wide SCSI devices to the internal LVD/SE connectors. If you do this, we recommend that you connect them to the SCSI Channel A LVD/SE connector and that you connect all Ultra160 and Ultra2 devices to the SCSI Channel B connector. Follow these steps to connect Wide SCSI devices:

Step 1 Locate a 68-pin internal Wide SCSI cable.

Step 2 Plug one end of the cable to one of the SCSI connectors.



Step 3 Plug the other end of the cable to a ***terminated*** Ultra/Fast Wide SCSI device.

Step 4 If you have other Ultra/Fast Wide SCSI devices, attach them to the connectors between the two ends of the cable. Be sure these other devices are ***unterminated***.

Step 5 Connect a power cable from your computer's internal power supply to each internal device.

More information about termination

The last SCSI device on the end of each SCSI bus cable must be terminated, and termination must be *disabled* for all other devices in the middle of the cables. Ultra160 and Ultra2 SCSI devices are automatically un-terminated, but Ultra SCSI and Fast/Wide SCSI devices do have termination that you must check. For more information, refer to the documentation for each SCSI device. If you are using external Ultra2 or Ultra160 devices, be sure to use an LVD terminator to terminate the last device in the chain. If you use a single-ended, active terminator (sometimes called an Ultra terminator) the SCSI devices will not operate at their maximum speed.

If you have any problems while setting up SCSI devices, check the following items first:

- Are all SCSI devices powered on?
- Are all SCSI cables and power cables properly connected?
- Does each device on each SCSI bus have a unique SCSI ID?
- Does the total SCSI cable length exceed the maximum allowable length? (See table below.)
- Is the SCSI bus properly terminated?

If you are still unable to resolve a problem, contact your vendor for help.

Maximum Cable Lengths

Maximum Cable Length	Data Transfer Rate	Maximum Devices Supported
25 m (82.0 ft)	Ultra160 SCSI (160 MBytes/sec) and Ultra2 SCSI (80 MBytes/sec)	1
12 m (39.4 ft)	Ultra160 SCSI (160 MBytes/sec)* and Ultra2 SCSI (80 MBytes/sec)	15
3 m (9.8 ft)	Fast Wide SCSI (20 MBytes/sec)	15
3 m (9.8 ft)	Fast SCSI (10 MBytes/sec)	7
3 m (9.8 ft)	Ultra SCSI (40 MByes/sec for 16-bit, 20 MBytes/sec for 8-bit)	4
1.5 m (4.9 ft)	Ultra SCSI (40 MByes/sec for 16-bit, 20 MBytes/sec for 8-bit)	5-7**

* Mixing Fast/Ultra devices with Ultra160 and Ultra2 SCSI devices causes the entire SCSI bus to default to Ultra SCSI speeds and cable length requirements.

** Ultra SCSI data transfer rates do not currently support more than seven devices connected to the SCSI card.

Configuring the Adaptec 7899W SCSI with SCSI*Select*

SCSI*Select* enables you to change SCSI settings without opening the computer or handling the card. SCSI*Select* also enables you to low-level format or verify the disk media of your SCSI hard disk drives. The following table lists the available and default settings for each SCSI*Select* option. The settings that are marked as "Auto-sync" are automatically synchronized for both SCSI channels—for example, if you change the Boot Channel option to **B First** on Channel A, the change will apply to Channel B as well. All other options can be set separately for each of the two SCSI channels.

The default settings are appropriate for most systems and should not be changed. Run SCSI*Select* if you need to change or view current settings, or if you need to use the SCSI disk utilities.

SCSI*Select* Options	**Available Settings**	**Default Setting**
SCSI Bus Interface Definitions:		
Host Adapter SCSI ID	0-15	7
SCSI Parity Checking	Enabled Disabled	Enabled
Host Adapter SCSI Termination: Ch. A	Automatic Low On/High On Low Off/High Off Low Off/High On	Automatic
Ch. B	Automatic, Enabled, Disabled	Automatic
Boot Device Options:		
Boot Channel *[Auto-sync]*	A First, B First	A First
Boot SCSI ID	0-15	0
Boot LUN Number[a]	0-7	0
SCSI Device Configuration:		
Sync Transfer Rate (MBytes/sec)	160, 80.0, 53.4, 40.0, 32.0, 26.8, 20.0, 16.0, 13.4, 10.0, ASYN	160
Initiate Wide Negotiation	Yes, No	Yes (Enabled)
Enable Disconnection	Yes, No	Yes (Enabled)
Send Start Unit Command	Yes, No	Yes (Enabled)
Enable Write Back Cache [b]	Yes, No, N/C (No Change)	N/C (No Change)
BIOS Multiple LUN Support[b]	Yes, No	No (Disabled)
Include in BIOS Scan[b]	Yes, No	Yes (Enabled)
Advanced Configuration Options:		
Reset SCSI Bus at IC Initialization	Enabled, Disabled	Enabled
Display <Ctrl> <A> Messages during BIOS Initialization *[Auto-sync]*	Enabled, Disabled	Enabled
Extended BIOS Translation for DOS Drives > 1 GByte	Enabled, Disabled	Enabled
Verbose/Silent Mode *[Auto-sync]*	Verbose, Silent	Verbose

SCSI*Select* Options	**Available Settings**	**Default Setting**
Host Adapter BIOS *[Auto-sync]*	Enabled Disabled: Scan Bus Disabled: Not Scan	Enabled
Domain Validation[b] *[Auto-sync]*	Enabled, Disabled	Enabled
Support Removable Disks Under BIOS as Fixed Disks[b]	Disabled, Boot Only, All Disks	Disabled
BIOS Support for Bootable CD-ROM[b]	Enabled, Disabled	Enabled
BIOS Support for Int 13 Extensions[b]	Enabled, Disabled	Enabled

a.Setting is valid only if Multiple LUN Support is enabled.
b.Settings are valid only if host adapter BIOS is enabled.

Follow these steps to start SCSI*Select*:

Turn on or restart your system.

During the startup process, pay careful attention to the messages that appear on your screen. When the following message appears on your screen, press the **[Ctrl]+[A]** keys simultaneously (this message appears for only a few seconds):

```
Press <Ctrl><A> for SCSISelect (TM) Utility!
```

Select SCSI Channel A or B. Most SCSI*Select* options can be set separately for each SCSI channel.

From the menu that appears, use the arrow keys to move the cursor to the option you want to select, then press **[Enter]**.

Note: If you have difficulty viewing the display, press F5 to toggle between color and monochrome modes. (This feature may not work on some monitors.)

Exiting SCSI*Select*

Follow these steps to exit SCSI*Select*:

Press Esc until a message prompts you to exit (if you changed any settings, you are prompted to save the changes before you exit).

At the prompt, select Yes to exit, then press any key to reboot the computer. Any changes you made in SCSI*Select* take effect after the computer boots.

Using SCSI*Select* Settings

To select an option, use the arrow keys to move the cursor to the option, then press **[Enter]**.

In some cases, selecting an option displays another menu. You can return to the previous menu at any time by pressing **[Esc]**.

To restore the original SCSI*Select* default values, press **[F6]** from the main SCSI*Select* screen.

SCSI Bus Interface Definitions

- **Host Adapter SCSI ID**—(Default: *7*) Sets the SCSI ID for the SCSI controller. The Adaptec 7899W is set at 7, which gives it the highest priority on the SCSI bus. We recommend that you do not change this setting.

- **SCSI Parity Checking**—(Default: *Enabled*) When set to **Enabled**, verifies the accuracy of data transfer on the SCSI bus. Leave this setting enabled unless any SCSI device connected to the Adaptec 7899W does not support SCSI parity.

- **Host Adapter SCSI Termination**—(Default: *Automatic*) Determines the termination setting for the SCSI controller. The default setting is *Automatic*, which allows the SCSI controller to adjust the termination as needed depending on the configuration of the connected SCSI devices. We recommend that you do not change this setting.

Boot Device Options

- **Boot Channel**—(Default: *A First*) Specifies which of the two SCSI channels the boot device is connected to (if the computer boots from a SCSI device). If you change this setting, the change automatically applies to both SCSI channels.

- **Boot SCSI ID**—(Default: *0*) Specifies the SCSI ID of your boot device. We recommend that you do not change the default setting.

- **Boot LUN Number**—(Default: *0*) Specifies which LUN (Logical Unit Number) to boot from on your boot device. This setting is not valid unless Multiple LUN Support is Enabled

SCSI Device Configuration Options

SCSI Device Configuration options can be set individually for each connected SCSI device.

Note: To configure settings for a SCSI device, you must know its SCSI ID.

- **Sync Transfer Rate**—(Default *160*) Determines the maximum synchronous data transfer rate that the SCSI controller supports. We recommend that you leave the maximum (default) value of 160 MBytes/sec.

- **Initiate Wide Negotiation**—(Default: *Yes*) When set to **Yes**, the SCSI controller attempts 16-bit data transfer (wide negotiation). When set to **No**, the SCSI controller uses 8-bit data transfer unless the SCSI device requests wide negotiation.

  Note: Set Initiate Wide Negotiation to **No** if you are using an 8-bit SCSI device that hangs or exhibits other performance problems with 16-bit data transfer rate enabled.

- **Enable Disconnection**—(Default: *Yes*) When set to **Yes**, allows the SCSI device to disconnect from the SCSI bus. Leave the setting at Yes if two or more SCSI devices are connected to the SCSI chip. If only one SCSI device is connected, changing the setting to **No** results in slightly better performance.

- **Send Start Unit Command**—(Default: *Yes*) When set to **Yes**, the Start Unit Command is sent to the SCSI device at bootup.

The following three options have no effect if the SCSI BIOS is disabled. (The SCSI BIOS is normally enabled by default.)

- **Enable Write Back Cache**—(Default *N/C*) Can be used to enable or disable the write-back cache on SCSI disk drives connected to the host adapter. Leave this option at its default setting of N/C (no change), which usually allows for optimum drive performance.

- **BIOS Multiple LUN Support**—(Default: *No*) Leave this setting at **No** if the device does not have multiple Logical Unit Numbers (LUNs). When set to Yes, the SCSI controller BIOS provides boot support for a SCSI device with multiple LUNs (for example, a CD "juke box" device in which multiple CDs can be accessed simultaneously).

- **Include in BIOS Scan**—(Default: *Yes*) When set to **Yes**, the SCSI controller BIOS includes the device as part of its BIOS scan at bootup.

Advanced Configuration Options

Note: *Do not* change the Advanced Configuration Options unless absolutely necessary.

- **Reset SCSI Bus at IC Initialization**—(Default: *Enabled*) When set to **Enabled**, the SCSI controller generates a SCSI bus reset during its power-on initialization and after a hard reset.

- **Display <Ctrl> <A> Messages during BIOS Initialization**—(Default: *Enabled*) When set to **Enabled**, the SCSI BIOS displays the Press <Ctrl> <A> for SCSISelect (TM) Utility! message on your screen during system bootup. If this setting is disabled, you can still invoke the SCSI*Select* utility by pressing **<Ctrl> <A>** after the SCSI BIOS banner appears. If you change this setting, the change automatically applies to both SCSI channels.

- **Extended BIOS Translation for DOS Drives > 1 GByte**—(Default: *Enabled*) When set to **Enabled**, provides an extended translation scheme for SCSI hard disks with capacities greater than 1 GByte. This setting is necessary only for MS-DOS 5.0 or above; it is not required for other operating systems.

  Caution: Changing the translation scheme destroys all data on the drive. Be sure to back up your disk drives before changing the translation scheme.

  Use the MS-DOS Fdisk command to partition a disk larger than 1 GByte controlled by the SCSI BIOS, when using DOS.

- **Verbose/Silent Mode**—(Default: *Verbose)* When set to **Verbose**, the SCSI BIOS displays the host adapter model on the screen during system buildup. When set to **Silent**, the message will not be displayed during bootup. If you change this setting, the change automatically applies to both SCSI channels.

- **Host Adapter BIOS (Configuration Utility Reserves BIOS Space)**—(Default: *Enabled*) Enables or disables the SCSI BIOS. If you change this setting, the change automatically applies to both SCSI channels.
  - Leave at **Enabled** to allow the SCSI BIOS to scan and initialize all SCSI devices at initial bootup.
  - Set to **Disabled: Not scan** if the devices on the SCSI bus (e.g. CD-ROM drives) are controlled by software drivers and do not need the BIOS, and you do not want the BIOS to scan the SCSI bus.
  - Set to **Disabled: Scan Bus** if you don't need the BIOS, but want to scan SCSI devices on the bus.

The following four options on the next page have no effect when the SCSI BIOS is disabled. (The SCSI BIOS is normally enabled by default.)

- **Domain Validation**—(Default: *Enabled*) Determines what kinds of SCSI devices are connected and reduces data transfer speed if it detects older legacy SCSI devices. Displays the resulting data transfer rate. If you change this setting, the change automatically applies to both SCSI channels.

- **Support Removable Disks Under BIOS as Fixed Disks**—(Default: *Disabled*) Determines which removable-media drives are supported by the SCSI controller BIOS. The options are as follows:

- **Disabled**— No removable media drives are treated as hard disk drives. Software drivers are then required from the vendor, because the drives themselves are not controlled at all by the BIOS.

NOTE: *You may lose data* if you remove a removable-media cartridge from a SCSI drive controlled by the SCSI controller BIOS while the drive is on. If you want to be able to remove the media while the drive is on, install the removable-media software driver and set Support Removable Disks Under BIOS as Fixed Disks to **Disabled**.

- **Boot Only**—Only the removable media drive designated as the boot device is treated as an HDD

- **All Disks**—All removable media drives supported by the BIOS are treated as HDDs

- **BIOS Support for Bootable CD-ROMs**—(Default: *Enabled*) When set to **Enabled** the SCSI controller BIOS allows the computer to boot from a CD-ROM drive.

- **BIOS Support for Int 13 Extensions**—(Default: *Enabled*) When set to **Enabled**, the SCSI controller BIOS supports Int 13h extensions as required by Plug-and-Play. The setting can be either enabled or disabled if your system is not Plug-and-Play

Chapter 5: System Resources

Note: if you experience problems with setting up your system, always check the following things in the following order:

Memory, Video, CPU

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the TYAN website at: http://www.TYAN.com.

5.1 Beep Codes

Fatal errors, which halt the boot process are communicated through a series of audible beeps. For example, if the BIOS POST can initialize the video but an error occurs, an error message will be displayed. If it cannot display the message, it will report the error as a series of beeps.

If you hear one long beep followed by two short beeps, then a video problem has probably occurred and the BIOS is having difficulty initializing the video display. Any other beep sequences that may or may not occur are probably due to memory problems. If calling TYAN Tech Support, be sure that you know how many beeps your board made, and how long the beeps were. Also have other information such as your attached add-in cards, drives and OS to help speed up the support process and come to a possible solution faster.

5.2 Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, you must check the TYAN website: http://www.TYAN.com/

NOTE	Please be aware that by flashing your BIOS, you agree that in the even of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. TYAN does not have a policy of replacing BIOS chips directly with end users. In no event will TYAN be held responsible for damage done to the BIOS by the end user.

Appendix I: Hardware Monitoring Information

Hardware Monitoring Information

W83782D Pin #	W83782D Pin Name	Function Define		Bank	Offset	Suggested Formula
18	FANin3	Chassis Fan	Tachometer input from Fan3	0	2Ah	1350000/ (Reading*4)
19	FANin2	CPU2 Fan	Tachometer input from Fan2	0	29h	1350000/ (Reading*4)
20	FANin1	CPU1 Fan	Tachometer input from Fan1	0	28h	1350000/ (Reading*4)
38	PIID3	CPU2 Temp	Set sensor type to Pentium II	2	50h	Reading in ^{o}C
39	PIID2	CPU1 Temp	Set sensor type to Pentium II	1	50h	Reading in ^{o}C
40	PIID1	VRM Temp	Set sensor type to 2N3904	0	27h	Reading in ^{o}C
32	+12V	Main +12V	Resistor divider ratio: 28, 10	0	24h	Reading * 0.016 * (28+10)/10
33	+5V	Main +5V	Direct input	0	23h	Reading * 0.016
34	+3.3V	Main +3.3V	Direct input	0	22h	Reading * 0.016

Appendix II: About Adaptec NightHawk Compatibility

The Adaptec NightHawk has a standard 64-bit, 3.3V PCI interface, but will only function properly when inserted into a PCI slot supporting Adaptec’s Embedded RAID Logic (EMRL) or Intel's RAIDIOS(tm) logic.

To install the NightHawk controller, insert the device into the supported ZCR enabled PCI slot on the motherboard. To find out where the 3.3V PCI slot is, check **p.8** for location (refer to the mini-map of the motherboard).

To ensure proper installation, examine the systems screen during system boot. Instead of showing an Adaptec SCSI BIOS message, the system will display an Adaptec I_2OBIOS message indicating the results of its SCSI scans and RAID device creation.

Refer to the Adaptec ZCR controller device documentation for more details on installation and setup.

Appendix III: Glossary

ACPI (Advanced Configuration and Power Interface): a power management specification that allows the operating system to control the amount of power distributed to the computer's devices. Devices not in use can be turned off, reducing unnecessary power expenditure.

AGP (Accelerated Graphics Port): a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs at only 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

ATAPI (AT Attachment Packet Interface): also known as IDE or ATA; a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like HDDs.

ATX: the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, USB, serial, and parallel ports are built-in.

Bandwidth: refers to carrying capacity. The greater the bandwidth, the more data the bus, phone line, or other electrical path, can carry. Greater bandwidth, then, also results in greater speed.

BBS (BIOS Boot Specification): is a feature within the BIOS that creates, prioritizes, and maintains a list of all Initial Program Load (IPL) devices, and then stores that list in NVRAM. IPL devices have the ability to load and execute an OS, as well as provide the ability to return to the BIOS if the OS load process fails for some reason. At that point, the next IPL device is called upon to attempt loading of the OS.

BIOS (Basic Input/Output System): the program that resides in the ROM chip, and provides the basic instructions for controlling your computer's hardware. Both the operating system and application software use BIOS routines to ensure compatibility.

Buffer: a portion of RAM which is used to temporarily store data, usually from an application, though it is also used when printing, and in most keyboard drivers. The CPU can manipulate data in a buffer before copying it, all at once, to a disk drive. While this improves system performance --- reading to or writing from a disk drive a single time is much faster than doing so repeatedly --- there is also the possibility of losing your data should the system crash. Information stored in a buffer is temporarily stored, not permanently saved.

Bus: a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

Bus mastering: allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

Cache: a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times, since the needed information is stored in the SRAM instead of in the slow DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

Cache size: refers to the physical size of the cache onboard. This should not be confused with the cacheable area, which is the total amount of memory which can be scanned by the system in search of data to put into the cache. A typical setup would be a cache size of 512KB, and a cacheable area of 512MB. In this case, up to 512KB of the main memory onboard is capable of being cached. However, only 512KB of this memory will be in the cache at any given moment. Any main memory above 512MB could never be cached.

Closed and open jumpers: jumpers and jumper pins are active when they are “on” or “closed”, and inactive when they are “off” or “open”.

CMOS (Complementary Metal-Oxide Semiconductors): chips that hold the basic startup information for the BIOS.

COM port: another name for the serial port, which is called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

DDR (Double Data Rate): is a technology designed to double the clock speed of the memory. It activates output on both the rising and falling edge of the system clock rather than on just the rising edge, potentially doubling output.

DIMM (Dual In-line Memory Module): faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

DIMM bank: sometimes called DIMM sockets, because the physical slot and the logical unit are the same. That is, one DIMM module fits into one DIMM socket, which is capable of acting as a memory bank.

DMA (Direct Memory Access): channels that are similar to IRQs. DMA channels allow hardware devices (like soundcards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other tasks. As with IRQs, it is vital that you do not double up devices on a single line. Plug-n-Play devices will take care of this for you.

Doze mode: in this mode, only the CPU’s speed is slowed.
DRAM (Dynamic RAM): widely available, very affordable form of RAM which has the unfortunate tendency to lose data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

ECC (Error Correction Code or Error Checking and Correcting): allows data to be checked for errors during run-time. Errors can subsequently be corrected at the same time that they’re found.

EEPROM (Electrically Erasable Programmable ROM): also called Flash BIOS, is a ROM chip which can, unlike normal ROM, be updated. This allows you to keep up with changes in the BIOS programs without having to buy a new chip. TYAN’s BIOS updates can be found at http://www.TYAN.com

ESCD (Extended System Configuration Data): a format for storing information about Plug-n-Play devices in the system BIOS. This information helps properly configure the system each time it boots.

Fault-tolerance: a term describing a system where one component can quickly be replaced without causing a loss of service, such as in a RAID system.

Firmware: low-level software that controls the system hardware.

Form factor: an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX, although TYAN also makes some Baby-AT and ATX Footprint boards.

Global timer: onboard hardware timer, such as the Real-Time Clock (RTC).

Handshaking: a form of encryption. One system, typically the server, sends an encryption scheme to another agent, typically a client. Thus, the client's data is protected during transmittal to the server.

HDD: stands for Hard Disk Drive, a type of fixed drive.

H-SYNC: controls the horizontal synchronization/properties of the monitor.

IC (Integrated Circuit): the formal name for the computer chip.

IDE (Integrated Device/Drive Electronics): a simple, self-contained HDD interface. It can handle drives up to 8.4 GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs), with maximum capacity determined by the hardware controller.

IDE INT (IDE Interrupt): a hardware interrupt signal that goes to the IDE.

I**/O (Input/Output):** the connection between your computer and another piece of hardware (mouse, keyboard, etc.)

Initial Program Load (IPL): a feature built into BBS-compliant devices, describing those devices as capable of loading and executing an OS, as well as being able to provide control back to the BIOS if the loading attempt fails.

IPL: see Initial Program Load.

IRQ (Interrupt Request): an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one device hooked up to each IRQ line; doubling up devices on IRQ lines can lock up your system. Plug-n-Play operating systems can take care of these details for you.

ISA (Industry Standard Architecture): a slower 8- or 16-bit bus (data pathway).

Latency: the amount of time that one part of a system spends waiting for another part to catch up. This is most common when the system sends data out to a peripheral device, and it waiting for the peripheral to send some data back (peripherals tend to be slower than onboard system components).

Mirroring: see RAID.

NVRAM: ROM and EEPROM are both examples of Non-Volatile RAM, memory that holds its data without power. DRAM, in contrast, is volatile.

OEMs (Original Equipment Manufacturers): Compaq or IBM package other companies' motherboards and hardware inside their case and sell them.

Parallel port: transmits the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

PCI (Peripheral Component Interconnect): a 32 or 64-bit local bus (data pathway) which is faster than the ISA bus. Local buses are those which operate within a single system (as opposed to a network bus, which connects multiple systems).

PCI PIO (PCI Programmable Input/Output) modes: the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

PCI-to-PCI bridge: allows you to connect multiple PCI devices onto one PCI slot.

Pipeline burst SRAM: a fast secondary cache. It is used as a secondary cache because SRAM is slower than SDRAM, but usually larger. Data is cached first to the faster primary cache, and then, when the primary cache is full, to the slower secondary cache.

Pipelining: improves system performance by allowing the CPU to begin executing a second instruction before the first is completed. A pipeline can be likened to an assembly line, with a given part of the pipeline repeatedly executing a set part of an operation on a series of instructions.

PM timers (Power Management timers): software timers that count down the number of seconds or minutes until the system times out and enters sleep, suspend, or doze mode.

PnP (Plug-n-Play): a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Novice end users can simply plug them into a computer that is running on a Plug-n-Play aware operating system (such as Windows 98), and go to work. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

PXE (Preboot Execution Environment): one of four components that together make up the Wired for Management 2.0 baseline specification. PXE was designed to define a standard set of preboot protocol services within a client, towards the goal of allowing networked-based booting to boot using industry standard protocols.

RAID (Redundant Array of Independent Disks): a way for the same data to be stored in different places on many hard drives. By using this method, the data is stored redundantly, also the multiple hard drives willl appear as a single drive to the operating system. RAID level 0 is is known as striping, where data is striped (or overlapped) across multiple hard drives, but offers no fault-tolerance. RAID level 1 is known as mirroring, which stores the data within at least two hard drives, but does not stripe. RAID level 1 also allows for faster access time and fault-tolerance, since either hard drive can be read at the same time. RAID level 0+1 is both striping and mirroring, providing fault-tolerance, striping, and faster access all at the same time.

RAM (Random Access Memory): technically refers to a type of memory where any byte can be accessed without touching the adjacent data, is often used to refer to the system’s main memory. This memory is available to any program running on the computer.

ROM (Read-Only Memory): a storage chip which contains the BIOS; the basic instructions required to boot the computer and start up the operating system.

SDRAM (Synchronous Dynamic RAM): called as such because it can keep two sets of memory addresses open simultaneously. By transferring data alternately from one set of addresses and then the other, SDRAM cuts down on the delays associated with non-synchronous RAM, which must close one address bank before opening the next.

Serial port: called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another).

SCSI Interrupt Steering Logic (SISL): Architecture that allows a RAID controller, such as AcceleRAID 150, 200 or 250, to implement RAID on a system board-embedded SCSI bus or a set of SCSI busses.

SIMM (Single In-line Memory Module): formally the most common form of RAM for motherboards. They must be installed in pairs, and do not have the carrying capacity or the speed of DIMM modules.

Sleep/Suspend mode: in this mode, all devices except the CPU shut down.

SDRAM (Static RAM): unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster and more expensive.

Standby mode: in this mode, the video and hard drives shut down; all other devices continue to operate normally.

Striping: see RAID

UltraDMA-33/66/100: a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without proper UltraDMA controller, your system cannot take advantage of higher data transfer rates of the new UltraDMA/UltraATA hard drives.

USB (Universal Serial Bus): a versatile port. This one port type can function as a serial, parallel, mouse, keyboard or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices.

VGA (Video Graphics Array): the PC video display standard

V-SYNC: controls the vertical scanning properties of the monitor.

ZIF Socket (Zero Insertion Force socket): these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and a lever is pulled down. This shift the processor over and down, guiding into the board and locking it into place.

Technical Support

If a problem arises with your system, you should turn to your dealer for help first. Your system has most likely been configured by them, and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance. Furthermore, if you purchased your system from a dealer near you, you can actually bring your system to them to have it serviced, instead of attempting to do so yourself (which can have expensive consequences).

Help Resources:

1. See the FAQ and beep codes section of this manual.
2. See the TYAN website for FAQ, bulletins, driver updates, and other information: http://www.TYAN.com
3. Contact your dealer for help BEFORE calling TYAN.
4. Check the TYAN user group: alt.comp.periphs.mainboard.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you.

Notice for the USA
Compliance Information Statement (Declaration of Conformity Procedure) DoC
FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

1) This device may not cause harmful interference, and
2) This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:

    - Reorient or relocate the receiving antenna.
    - Increase the separation between the equipment and the receiver.
    - Plug the equipment into an outlet on a circuit different from that of the receiver.
    - Consult the dealer on an experienced radio/television technician for help.

Notice for Canada
This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conforme aux norms de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'ineteference radio.)

Notice for Europe (CE Mark)
This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

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